







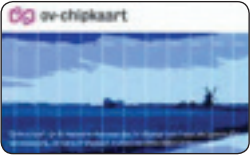





Details	Development	Open payment capabilities ^{iv}	Investment*	Accommodates multiple fares structures & integrates several transit partners	Key Features
PRESTO 	2006	YES	<ul style="list-style-type: none"> GO Transit/# 905 providers \$189m Next Generation \$236 million OC Transpo \$40m TTC \$255 million 	<ul style="list-style-type: none"> Consistent with the objectives of Metrolinx's <i>The Big Move</i> Common payment system to travel across GO Transit and seven municipal transit agencies, will launch on OC Transpo and TTC Can be deployed by any Ontario municipal transit system 	<ul style="list-style-type: none"> Reloadable contactless stored-value smart card PRESTO card attributes are customized to the requirements of its transit partners The technology platform allows for the card based services described for other systems GO Transit/GTHA Transit agencies - registered card is protected against loss and allow for automatic reload from rider's bank account Lost registered card easily replaced and the balance transferred to new card OC Transpo – online registration for security, auto-reload, online period pass, period pass auto renew-allows through PRESTO website TTC – offers same benefits as GTHA and OC Transpo cards plus the ability to pay by credit and debit cards, 24/7 station self service kiosks, instant load – online loading recognized by card immediately, period passes will accommodate all desired fare media including concessions and period passes
Oyster (London, UK) 	1998	YES	Minimum £1.1 billion or CDN\$1.7 billion based on November 30, 2012 exchange rates (1 GBP = \$1.5895) ^{* viii}	<ul style="list-style-type: none"> Common payment system to travel across the transit networks in Greater London As TfL is the predominant provider of transit services, the fare structures are based on the TfL model 	<ul style="list-style-type: none"> Reloadable contactless stored-value smart card There are three types: <ul style="list-style-type: none"> Standard – can be registered online and hold single, period tickets and travel permits Photocards – designed for students, children and disabled residents “Pay as you go” – for travelers and visitors
OV-chipkaart (Netherlands) 	2003 ⁱ	YES mobile only ^v	~€1.1 billion or CDN\$1.4 billion based on November 30, 2012 exchange rates (1 Euro = \$1.2863) ^{* vx}	<ul style="list-style-type: none"> Common payment system to travel across all Dutch public transport networks The system processes various fare structures that the transit operators have 	<ul style="list-style-type: none"> Reloadable contactless stored-value smart card There are two types: <ul style="list-style-type: none"> “Anonymous” – transferable and can hold credit but not personal travel products such as a monthly pass and cannot be used for age discount trips “Personal” – applied online with personal information and can hold credit and/or multiple personal travel products simultaneously and can be blocked if lost or stolen In addition to the above two types of cards, disposable tickets which is made of stiff paper and holds only simple travel products are also available for occasional use
Octopus (Hong Kong, China) 	1994	NO ^{vi}	No public information available	<ul style="list-style-type: none"> Common payment system to travel across all public transit networks in Hong Kong The system processes various fare structures that the transit operators have 	<ul style="list-style-type: none"> Reloadable contactless stored-value smart card There are five types: <ul style="list-style-type: none"> Adult – the standard version of Octopus card Child – for Children aged between 3 and 11 Student – for students attending secondary schools and universities Elder – for eligible senior people Personalized – available upon registration
Opal (Sydney, Australia) <div style="border: 1px solid black; padding: 5px; text-align: center;">To be launched in 2014</div>	1999 2010 ⁱⁱ (re-procurement) ⁱⁱⁱ	Future ability ^{vii}	AUD\$1.2 billion over 15 years or CDN\$1.23 billion based on November 30, 2012 exchange rates (1 AUD = \$1.0372) ^{* x}	<ul style="list-style-type: none"> Upon completion, the Opal card will allow cardholders to travel across various public and private transit networks in Sydney with a common payment system¹ It is expected that the system will be capable to process various fare structures that the transit operators have 	<ul style="list-style-type: none"> Reloadable contactless stored-value smart card² Information regarding the card features will be available once the cards are launched
Clipper (San Francisco, US) 	1999	NO	~\$356m+ (US) or CDN\$ 353 million based on November 30, 2012 exchange rates (1 USD = \$0.992) [*]	<ul style="list-style-type: none"> Common payment system to travel across eight transit networks in the San Francisco Bay Area The system processes various fare structures that the transit operators have 	<ul style="list-style-type: none"> Reloadable contactless stored-value smart card Regular Clipper card – can be registered online and allows for automatic reload RTC Clipper card – a version of Clipper created especially for passengers with qualifying disabilities Youth / Senior Clipper card – for eligible children and senior people
Chicago Card (Chicago, US) 	2000	In progress	\$508.9 million (US) or CDN\$ 505 million based on November 30, 2012 exchange rates (1 USD = \$0.992) [*]	<ul style="list-style-type: none"> Common payment system to travel across the CTA and PACE transit networks in the city of Chicago and the surrounding suburbs The system processes various fare structures that the transit operators have 	<ul style="list-style-type: none"> Reloadable contactless stored value smart card There are three types: <ul style="list-style-type: none"> Chicago Card – a stored value card from which the fare is charged on a pay-per-use basis Chicago Card Plus – an account-based card which links to the cardholder's credit card, debit card or employer-provided transit benefit program Chicago Card Plus can be set up as monthly period passes or on a pay per use basis Chicago Card Plus/I-GO Card – the card allows cardholders access to I-GO vehicles (i.e. Non-profit car sharing program) and ride the CTA with a single card. Like Chicago Card Plus it is also account based

* Exchange rates are for illustrative purposes only based upon current exchange rates. Source for all exchange rate information is <http://www.oanda.com/currency/historical-rates/>

² <http://www.transport.nsw.gov.au/opal>

Details	Comercialization Capabilities	Financial information and sources
<p>PRESTO</p> 	<ul style="list-style-type: none"> Technology platform allows strategic review of potential opportunities is intended in future as GO Transit, OC Transpo and TTC deployments mature 	
<p>Oyster (London, UK)</p> 	<ul style="list-style-type: none"> Does not provide non-transit services or products 	
<p>OV-chipkaart (Netherlands)</p> 	<ul style="list-style-type: none"> The system has the capacity to process non-transit transactions Heavily focused on developing the non-transit revenue aspect of its business and in midst of pilot program to establish market for OV-chipkaart as payment option 	<ul style="list-style-type: none"> 2003: €120M with future allotment of an additional €80 million to roll the card out across the Netherlands^{xi} 2006 – 2008: the project incurred an over-run of €100 million^{xii} €726 million allocated to towards the cost of introducing the card across the rail network, bringing the total to almost €1.1 billion^{xiii}
<p>Octopus (Hong Kong, China)</p> 	<ul style="list-style-type: none"> The Octopus card can also be used for the following: Retail transactions – payment at convenience stores, supermarkets, restaurants, parking, and other point-of-sale applications such as service stations and vending machines Personal identification – registered personalized cards can be used for access control in office/residential buildings and for school administrative functions³ 	
<p>Opal (Sydney, Australia)</p> <p>To be launched in 2014</p>	<ul style="list-style-type: none"> No information available at this moment – the system is currently under development 	<ul style="list-style-type: none"> The value of the original contract with ERG is AUS\$367 million. The contract as terminated in 2008^{xxi} AUS\$95 million had been spent on the project when the contract with ERG was terminated^{xxii} An AUS\$370 million contract was awarded to the Cubic-led Pearl consortium in May 2010 by the Public Transport Ticketing Corporation (PTTC)^{xxiii} The total value of the new electronic ticketing system is about AUS\$ 1.2 billion over 15 years^{xxiv}
<p>Clipper (San Francisco, US)</p> 	<ul style="list-style-type: none"> The Clipper card can also be used to pay for parking A program is currently underway to develop a new “smart card” that allows card holders to pay for parking, taxis and potentially rides. This new card could potentially replace or supplement the existing Clipper card 	<ul style="list-style-type: none"> 1993: projected capital cost of \$4 million^{xiv} 1999: 10 year contract valued at \$114 - \$157 million (US) depending on rider usage^{xv} 2010: the capital costs of Clipper (and Translink, before the re-branding) from inception in 2003 to the terminus of the current memorandum of understanding (MOU) in 2019 is expected to be \$141 million^{xvi} 2010: To date, the region has spent more than \$100 million installing fare equipment with the participating operators^{xvii} 2010: Adding all the operating costs together, participating transit agencies will pay more than \$115 million over the term of the MOU^{xviii}
<p>Chicago Card (Chicago, US)</p> 	<ul style="list-style-type: none"> The current system does provide non-transit services or products 	<ul style="list-style-type: none"> US\$508.9 million - represents value of the new open payment system contract with Cubic Transportation^{xix} This does not include the costs of the current Chicago Card system

ⁱ www.railwaygazette.com/news/single-view/view/ov-chipkaart-roll-out-creeps-forward.html

ⁱⁱ www.theage.com.au/articles/2003/03/12/1047431095361.html

ⁱⁱⁱ www.itwire.com/it-industry-news/strategy/38211-pearl-consortium-wins-nsw-tcard-contract

^{iv} www.masstransitmag.com/article/10338977/whats-the-cost-of-open-payment-systems - An Open Payment System means being able to pay your transit fare using contactless bank cards such as MasterCard PayPass, VISA Wave and American ExpressPay or using a smart phone.

^v www.chess-ix.com/2012/06/12/ov-chipkaart-in-the-cloud/

^{vi} www.metroplanning.org/news-events/article/6548 - (Octopus can be used as a debit card and hence, can be used for other purposes outside of transit but other credit/debit cards or mobile phones cannot be used in a “contactless” manner to pay for transit)

^{vii} www.transport.nsw.gov.au/sites/default/files/b2b/releases/111031_ministers-budget-estimates-update.pdf

^{viii} www.londonreconnections.com/2011/the-problem-with-simples-why-oyster-is-a-victim-of-its-own-success/

^{ix} www.railwaygazette.com/news/single-view/view/ov-chipkaart-roll-out-creeps-forward.html

^x www.parkeon.com/uk/20100604317/parkeon-wins-again-in-australia.html

^{xi} www.railwaygazette.com/news/single-view/view/ov-chipkaart-roll-out-creeps-forward.html

^{xii} www.railwaygazette.com/news/single-view/view/ov-chipkaart-roll-out-creeps-forward.html

^{xiii} www.railwaygazette.com/news/single-view/view/ov-chipkaart-roll-out-creeps-forward.html

^{xiv} www.sfgate.com/news/article/Coding-Problems-To-Derail-BART-s-Translink-Program-3019725.php

^{xv} www.thefreelibrary.com/ERG+Motorola+Alliance+Awarded+Largest+Smart+Card+System+Contract+in...-a054734299

^{xvi} sf.streetsblog.org/2010/09/15/despite-cost-clipper-card-promises-convenience/

^{xvii} sf.streetsblog.org/2010/09/15/despite-cost-clipper-card-promises-convenience/

^{xviii} www.smartcardalliance.org/articles/2012/08/28/chicago-bus-operator-pace-selects-cubic-for-open-payment-system

^{xxi} www.smh.com.au/technology/enterprise/smartcard-operator-branded-dishonest-20100411-s0w2.html

^{xxii} www.itwire.com/it-industry-news/strategy/38211-pearl-consortium-wins-nsw-tcard-contract

^{xxiii} cts.cubic.com/en-us/customers/australasia/casestudysydney.aspx

^{xxiv} www.parkeon.com/uk/20100604317/parkeon-wins-again-in-australia.html

³ http://en.wikipedia.org/wiki/Octopus_card

NOTE: Specific financial details and technology information have been taken from public sources.